

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

REACTIVE SURFACES LTD., LLP,
Petitioner,

v.

TOYOTA MOTOR CORPORATION,
Patent Owner.

Case IPR2016-01462
Patent 8,324,295 B2

Before CHRISTOPHER M. KAISER, JEFFREY W. ABRAHAM, and
MICHELLE N. ANKENBRAND, *Administrative Patent Judges*.

KAISER, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

INTRODUCTION

A. Background

Reactive Surfaces Ltd., LLP (“Petitioner”) filed a Petition (Paper 1, “Pet.”) requesting an *inter partes* review of claims 1–27 of U.S. Patent No. 8,324,295 B2 (Ex. 1001, “the ’295 patent”). Toyota Motor Corporation (“Patent Owner”) filed a Preliminary Response (Paper 10, “Prelim. Resp.”). On February 9, 2017, we instituted trial to review the patentability of claims 1–9, 13–20, and 22–27. Paper 14 (“Inst. Dec.”); *see* Paper 16 (correcting identification of claims on which review was instituted).

Subsequently, Patent Owner filed a Response (Paper 27 (“PO Resp.”)), Petitioner filed a Reply (Paper 35), and Patent Owner filed a Sur-Reply (Paper 40). Patent Owner filed Observations on Cross-Examination (Paper 42), to which Petitioner filed a Response (Paper 47). In addition, Patent Owner filed a motion to exclude certain evidence Petitioner submitted. Paper 41. Petitioner filed an opposition to the motion to exclude. Paper 46. Patent Owner filed a reply to the opposition. Paper 48.

We have jurisdiction under 35 U.S.C. § 6, and we issue this Final Written Decision pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. We conclude that Petitioner has established by a preponderance of the evidence that claims 1–6, 9, 23–25, and 27 of the ’295 patent are unpatentable. We also conclude that Petitioner has not established by a preponderance of the evidence that claims 7, 8, 13–20, 22, or 26 are unpatentable. In addition, we dismiss as moot Patent Owner’s Motion to Exclude.

B. Related Matters

The parties have not identified any judicial or administrative matters that involve the '295 patent or that are otherwise related to this case.¹ Pet. 1; Paper 4, 1.

C. The Instituted Grounds of Unpatentability

We instituted review of claims 1–9, 13–20, and 22–27 of the '295 patent based on the following grounds:

Statutory Ground	Basis	Challenged Claim(s)
§ 103	McDaniel '853 ²	1, 2, 4, 6, 9, 23, 25, and 27
§ 103	McDaniel '853 and Fritzsche ³	3, 5, 7, 8, 13–17, 19, 20, 22, 24, and 26
§ 103	McDaniel '853, Fritzsche, and McDaniel '811 ⁴	18

D. The '295 Patent

The '295 patent is directed to “[p]rotein-polymer compositions and processes for their production.” Ex. 1001, at [57]. Specifically, these compositions “have improved resistance to ultraviolet light induced weathering and associated loss of enzyme activity.” *Id.* Coatings containing

¹ Patent Owner notes that the '295 patent was the subject of *Reactive Surfaces Ltd. LLP v. Toyota Motor Engineering & Manufacturing North America, Inc. et al.*, Case No. 1-13-CV-1098-LY (W.D. Tex.), and *Reactive Surfaces Ltd. LLP v. Toyota Motor Corporation*, Case No. 1:14-CV-1009-LY (W.D. Tex.), both of which have been dismissed. Pet. v; Paper 4, 1.

² McDaniel, US 2004/0109853 A1, published June 10, 2004 (Ex. 1007, “McDaniel '853”).

³ Fritzsche et al., WO 2008/000646 A1, published Jan. 3, 2008 (Ex. 1010, “Fritzsche”).

⁴ McDaniel et al., US 2009/0238811 A1, published Sept. 24, 2009 (Ex. 1005, “McDaniel '811”).

enzymes may be used to decompose “biological stain material such as insect stains or bird droppings” that otherwise might “deeply diffuse into the subsurface of [the] coatings.” *Id.* at 1:16–58. Such coatings, “however, are subject to polymer degradation by weathering that the prior art attributes to photolysis, photooxidation, or other scission producing chemical reactions in the structure of the polymeric material itself.” *Id.* at 1:59–63. Accordingly, the ’295 patent provides compositions that have “improved enzyme stability to ultraviolet induced weathering” by including “a polymer resin, a cross-linker, a bioactive enzyme and at least two ultraviolet light stabilizers,” where “[a]t least one light stabilizer is a sterically hindered amine, and at least one light stabilizer is a UV absorber.” *Id.* at 2:14–19. In all claims of the ’295 patent, the “UV absorber is present at a concentration in excess of 5% by weight.” *Id.* at 2:19–20; *see id.* at 23:35–26:7.

E. Illustrative Claims

We instituted trial on claims 1–9, 13–20, and 22–27. Inst. Dec. 29. Claims 1, 5, 13, 23, and 24 are independent. Ex. 1001, 23:35–26:7. Claims 1, 13, and 23 are illustrative; they recite:

1. A curable protein-polymer composition comprising:
 - a polymer resin;
 - a cross-linker;
 - a bioactive enzyme; and
 - at least two ultraviolet light stabilizers whereby at least one light stabilizer is a sterically hindered amine, and at least one light stabilizer is a UV absorber, said UV absorber present at a concentration in excess of 5% by weight.

Id. at 23:35–42.

13. A process for preparing a UV stabilized protein-polymer composite material, comprising:

providing an admixture of a polymer resin, a surfactant, a non-aqueous organic solvent, a sterically hindered amine, and a UV absorber, said UV absorber present at sufficient amounts to yield a final composition that is at least 5% by weight of said UV absorber;

mixing an aqueous solution containing isolated bioactive enzymes with the admixture, wherein said aqueous solution is substantially free of surfactant, to produce an emulsion;

and mixing the emulsion with a crosslinker to produce a curable UV stabilized protein-polymer composition.

Id. at 24:16–28.

23. A process of stabilizing enzyme activity in a protein-polymer curable composition against weathering from ultraviolet light comprising:

adding to a protein-polymer composition wherein said protein is an enzyme, at least two ultraviolet light stabilizers whereby at least one light stabilizer is a sterically hindered amine, and at least one light stabilizer is a UV absorber, said UV absorber present at a concentration in excess of 5% by weight.

Id. at 24:56–64.

ANALYSIS

A. Claim Construction

In an *inter partes* review, we construe claim terms in an unexpired patent according to their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *see Cuozzo Speed Techs. LLC v. Lee*, 136 S. Ct. 2131, 2144 (2016) (upholding the use of the broadest reasonable interpretation standard). Claim terms generally are given their ordinary and customary meaning, as would be

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